body at the end of anesthesia." Our object of de-etherization is therefore not so much to awaken the patient as to eliminate the distressing after-effects of etherization.

In a hospital where the anesthetist is scheduled for a succession of cases it is often difficult to give the desired length of time for de-etherization, both on account of the anesthetist and the operating room. I feel, therefore, that we might have obtained more striking results, if the carbon dioxid treatment could have been kept up a little longer in several of the cases.

St. Luke's Hospital.

A STATISTICAL STUDY OF EMPYEMA IN CHILDREN UNDER 13 YEARS DURING THE PAST TEN YEARS AT THE LOS ANGELES GENERAL HOSPITAL*

By ALFRED J. SCOTT, JR., M. D., Los Angeles

The object of this study was to determine if possible how many cases of empyema in children enter this 1200-bed hospital with more than 10 per cent of the beds provided for children.

Our problem was: How many cases were there? What was done for them? What were the results? What was the class of patients, racially? Is empyema harder on children under 5 years than older? What type of operation gives the best results under 5 years and over 5 years?

We did not try to compile the records of the pneumonias due to lack of sufficient help, and even with the empyemas it was difficult to segregate children from adults as every record had to be examined to determine the age.

There were only twenty-six cases in children in the nine and one-half years from January 1, 1913, to June 1, 1923: Males, 21; females, 5.

Age Incidence—Under 6 months, 1; 6 to 12 months inclusive, 1; 13 to 24 months, 1; 4 to 5 years, 9; 6 to 7 years, 4; 8 to 12 years, 8; 13 years, 2; total 26.

Age Division—Under 5 years, 12; 5½ to 13 years, 14.

Nationality—American, 14; Mexican, 9; Italian, 3.

Type of Pneumonia Preceding the Empyema—Lobar, 15; broncho, 6; trauma, 1; unknown, 4.

Location in Chest—Right side, 12; left side, 16.

Length of Time in the Hospital—One patient lived only one day, and another stayed thirteen months because of an unhealed sinus; of the remaining twenty-four patients, one stayed eleven days, two 120 days, and the average for the twenty-four was twenty-one days.

The average length of time after the patient entered the hospital until a diagnosis of empyema was made was eight days.

The Predominating Symptoms Were—Pain, 11 times; temperature of septic type, 18 times; dyspnœa, 16 times, and cough, 18 times.

Sleep Was Noted As—Poor, 5 times; fair, 4 times, and good, 3 times.

Loss of Weight Was Noted—Eight times.

Urinalysis Showed—Albumen and casts, 3 times, and normal urine, 12 times.

X-rays were not made in eleven patients, and a number of times in fifteen others. Where done, the average recorded statement was: Opacity in the region of the fluid; opacity if the lungs were compressed; and if the amount of the fluid was large, cardiac displacement was present.

Physical examination notes may be summarized as follows: Dullness to flatness; distant breath sounds over the dull areas; distant voice sounds over the dull areas; few crepitant rales above the dull areas; exaggerated breathing on the opposite side; heart displaced by fluid and where the condition has been present for some time; bulging of the chest over the affected areas; smoothing out of intercostal muscles and lagging of the chest over the area of the fluid.

Type of Operation—Aspiration, 6 cases; thoracocentesis, 7 cases; rib resection, 8 cases; no operation, 5 cases; a combination of aspiration and thoracocentesis, 3 cases; aspiration and resection, 2 cases.

The Final Results—Died, 10 cases; incomplete records and patient left hospital, 2 cases; left hospital improved, 12 cases; left hospital unimproved, 2 cases. Of these that died, seven were under 5 years, three 5½ years and over.

Relation of the type of operation and age incidence as to the end results:

Under 5 years:

Type operation	No. cases	Recovered	Died
Aspiration	2	1	1
Thoracocentesis	2	—	2
Resection	3	2	1
None done (left hosp. unimp.)	5	2	3
Total	12	5	7

Cases over 5 years:

Type operation	No. cases	Recovered	Died
Aspiration	4	3	1
Resection	5	5	—
Thoracocentesis	5	3	2
Total	14	11	3

Comparing these figures with those under 5 years shows again that resection is rather more favorable in its prognosis.

The type of organisms found in the pus removed from the chest showed:

Non-hemolytic streptococcus	1
Non-hemolytic streptococcus and pneumococcus	2
Pneumococcus, alone	5
Gram positive, extracellular coccus	1
Gram positive, bacillus and pneumococcus	2
Staphylococcus albus and pneumococcus	1
Staphylococcus albus, gram positive, bacillus and pneumococcus	1
Staphylococcus albus and micrococcus tetragenous	1
Tubercle bacillus	1
No cultures	11

The cases that died had the following organisms:

Pneumococcus, alone	1
Pneumococcus with gram positive, bacillus	1
Short-chained streptococcus and pneumococcus	1

SUMMARY AND CONCLUSIONS

From the number of case histories in this series we cannot draw any very definite conclusions. The laboratory work has not been complete enough except in a few instances. There has been marked improvement in history writing and examinations, x-rays, etc., since 1921. Therefore the results of this study show:

1. Rib resection in this series has been done

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over a longer period of time. The clinical results seem to have been more satisfactory than with any other type of operation.

2. Time between operation and discharging the patient was three months (excluding one case).

3. The left side of the chest was most frequently involved (sixteen cases).

4. In this small series the race incidence was about equal in the ability to combat the disease.

5. Children over 5 years gave the best prognosis in this series.

6. The pneumococcus was present in the cultures of all the fatal cases, either alone or in a mixed infection, excluding the one case of tuberculosis.

7. It seems more logical where there is pus in a chest to make a hole large enough to get good drainage. If a small calibered tube was used, some pus must be retained, even when broken up by chemical solutions, which may make a good culture medium for bacteria.

8. If irrigations are valuable, why not use a large enough opening, large enough tubes and wash out less frequently?

9. The constant manipulations of the young infant and child to irrigate, upsets the delicate nervous system and undoubtedly interferes with convalescence.

10. Allow the infant or child to sleep at night and build up its resistance. This is of more value than mechanical interference from the outside.

11. If hospital records show such results, what must the results be in private practice on the outside of an institution, where accurate case records and checking up are not done?

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THE TREATMENT OF POST-INFLUENZAL ASTHMATIC BRONCHITIS*

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Post-influenzal bronchitis with or without symptoms of bronchospasm is a frequent sequel of epidemic influenza.

The condition results from secondary infection of a congested and edematous bronchial mucous membrane with a streptococcal flora containing, in the main, four types of these organisms.

Vaccination of such patients, over a shorter or longer period, with carefully prepared and properly administered autogenous vaccines containing these organisms gives results when all other methods of treatment have failed.

A successful therapeutic result would seem to depend not so much upon the age of the patient and the duration of symptoms as upon the absence of irreparable damage in the lungs and bronchi.

DISCUSSION *by Max Rothschild, San Francisco; George Piness, Los Angeles.*

As an aftermath of the waves of influenza, which began with the great pandemic of 1918, there are now a large number of patients who are suffering from some of its sequelae. Of these we have found asthmatic bronchitis to be an extremely important sequel and one not sufficiently emphasized. During the routine treatment of a large number of asthmatic patients over a period of about five years, we became impressed with the observation that of those instances of bacterial asthma which we were called upon to treat, two groups of patients responded better than the others. These were the children whose asthmatic bronchitis followed some acute respiratory infection, such as whooping-cough, bronchopneumonia, grippe, a neglected bronchitis or a tonsillitis, and secondly, those adults and children whose asthmatic paroxysms were definitely the outcome of an attack of influenza of varying severity. The role of infection and the treatment of bacterial asthma in childhood have been presented in a former communication. (Hurwitz, S. H., Bacterial Asthma in Children, Med. Clin. N. America, 1922, 6299.) In this paper, I wish to emphasize the value of properly prepared and carefully administered autogenous vaccines in the post-influenzal group, and to call attention to some of the end-results obtained by this mode of therapy.

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CHRONIC INFLUENZAL BRONCHITIS

Most patients affected with acute epidemic influenza recover without any pathological changes in the respiratory tract. In a small proportion, after the acute manifestations of the disease have subsided, there still remain certain annoying symptoms. These chronic symptoms, as well as the pathology in the lungs and bronchi underlying them, may last for months, and in many instances may be so serious that a complete return to a normal state can hardly be expected.

Chronic forms of influenza may manifest themselves in various clinical pictures. These have already been noted by Pfeiffer after the epidemic of 1890-1891, and again described by clinical observers who have studied the waves of recent years. In a large proportion of instances, especially those in which the primary disease ran a mild course without pulmonary complications, only a laryngitis and rhinopharyngitis remained for weeks or even months. In others in whom the bronchi were severely affected during the course of influenza, subacute purulent bronchitis, general or apical, remained for an indefinite period. In still others in whom the lungs and pleura were implicated during the course of the primary acute disease, bronchiectasis, chronic abscess of the lung and thickened pleura remained. Many of these patients were pronounced tuberculous and treated in hospitals and sanatoria for the tuberculous.

Of these post-influenzal sequelae involving the respiratory tract, chronic influenzal bronchitis, although not the most serious, may become very incapacitating. This is particularly true of patients whose bronchitis becomes associated with paroxysms of bronchospasm. Where this occurs, the condition may properly be designated post-influenzal asthmatic bronchitis. And it is to be emphasized that in these instances we are not concerned with true spasmodic attacks of bronchial asthma due to sensitization with bacterial or other proteins, but rather with a secondary infection of the bronchial mucous membrane whereby a simple chronic bronchitis is converted into an asthmatic bronchitis and to a change of the usual type of bronchitic sputum which is easily raised into a jelly-like and tenacious material that can be removed only with difficulty from the lumen of the bronchi, even